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ABSTRACT

This document, last in a series of 11 subvolumes of a handbook providing training for educational research and development personnel in the development of instructional materials, provides a glossary of technical terms used in this program. Each entry includes: (a) a definition; (b) appropriate cross references; and (c) a reference to appropriate handbook sections that provide more detailed information on the entry. This volume also serves as an index for the subject matter covered in the other volumes of the handbook and makes it possible for the learner to look up words introduced in other sections of the handbook. (PD)

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A Technology For Developing Instructional Materials

3 HANDBOOK

- A. PLAN STUDY OF CRITERION BEHAVIORS
- B. COLLECT AND ANALYZE DATA ABOUT CRITERION BEHAVIORS
- C. SEQUENCE AND GROUP CRITERION BEHAVIORS
- D. STATE CRITERION AND PREPARATORY OBJECTIVES
- E. PLAN SIMULATION BASED ON INSTRUCTIONAL AND LOGISTICAL NEEDS
- F. DEVELOP DIAGNOSTIC AND EVALUATIVE TESTS
- G. FORMULATE INSTRUCTIONAL STRATEGIES
- H. PLAN ACCOMMODATION OF INDIVIDUAL DIFFERENCES
- I. DEVELOP INSTRUCTIONAL MATERIALS
- J. EVALUATE INSTRUCTIONAL MATERIALS

X. INDEX

AUTHOR:

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VOLUMES IN THIS SERIES

1. USER'S MANUAL
2. ORIENTATION
3. HANDBOOK
   (eleven sub-volumes)
4. WORKBOOK
5. FINAL EXERCISES

FOREWORD

This is one of a series of eleven HANDBOOK sub-volumes which has been prepared to provide training for educational R&D personnel in the development of instructional materials.

The USER'S MANUAL, which accompanies the series, describes the role each volume is designed to play and the sequence recommended for its use in the training process. The user is, therefore, urged to read the instructions in the USER'S MANUAL before using this or any other separate volume.

ACKNOWLEDGMENTS

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The author is indebted: to Dr. Robert Fitzpatrick for reviewing portions of the series of volumes and for informal discussions concerning several training issues; to Mrs. Zita Glasgow for the first and critical use of this volume; and, not least, to Miss Kathleen Gubala for her tireless preparation of the complex manuscript required by this HANDBOOK.

George L. Gropper
March 1973

GLOSSARY

This section of the INDEX subvolume provides a glossary of technical terms used in this program. For each entry the glossary provides: (1) a definition; (2) crossreferences (when appropriate); and (3) a reference to appropriate HANDBOOK sections which provide more detailed information on the entry.

The glossary can also serve as an index for the subject matter covered in the HANDBOOK, although it is neither comprehensive nor is it fully cross-referenced. Its primary purpose is to accommodate the learner who is required to take the program in a *backward* order. Its availability makes it possible for the learner who begins by reading HANDBOOK sections or TASKS later in the development process to look up words which are introduced in other HANDBOOK sections devoted to TASKS appearing early in the development process. Thus, the GLOSSARY was developed to serve a specialized instructional function rather than the customary reference function.

Term	Definition	Additional Information	
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ACTION	One of the three elements into which behavior can be analyzed. The term refers to the response which is made to an INPUT or stimulus situation. It in turn produces an OUTPUT. Also see: *INPUT; OUTPUT.*		
ACTION CLASS	An ACTION is taken in response to a specific INPUT or class of INPUTS. Sometimes there are two or more actions which are interchangeable; i.e., any one of them may be taken in response to the same INPUT situation.	B	136-9
ACTION MODE	The type or category of ACTION which is taken. See: *PERCEPTUAL; MOTOR; VOCAL; and SubVOCAL.* Also see: *INPUT MODE; and OUTPUT MODE.*	B	250-261
ANALYSIS	See: *COMPETENCY analysis; LEARNING analysis; MODE analysis; TASK descriptions; and TASK analysis.*		
ASSOCIATION	The linking of an INPUT and the ACTION which is supposed to be taken in response to it. One of the four component skills. Also see: *CHAINS; DISCRIMINATION; and GENERALIZATION.*	B	179-193
AUDIO	One of the classifications of INPUTS and/or OUTPUTS serving as a basis for media selection. AUDIO refers to INPUTS or OUTPUTS involving Sound. Also see: *VERBAL; SYMBOLIC; and ENVIRONMENTAL.*		
BEHAVIOR CONTROL	An ACTION is said to be under the control of an INPUT (or stimulus situation) when it is consistently exhibited in the presence of the INPUT. Such behavior control is the goal of training or instruction. Also see: *FEEDBACK; PROMPTING; and REINFORCEMENT.*	G G	167-173 167-227
BEHAVIOR UNITS	See: *INPUT, ACTION, and OUTPUT.* See: *TASK, STEP, and SubSTEP.* See: *CRITERION BEHAVIOR; and SubCRITERION BEHAVIOR.*		
CHAINS	An ASSOCIATION involved the linkage of an INPUT and an ACTION. This results in an OUTPUT which in turn becomes the INPUT for a new ACTION. A series of such relationships is called a CHAIN. One of the four component skills. Also see: *ASSOCIATION; DISCRIMINATION; and GENERALIZATION.*	B	179-193

Term	Definition	Additional Information	
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COMPONENT SKILLS	TASK ANALYSIS seeks to identify in the CRITERION BEHAVIOR to be taught the specific combination of component skills which make it up. There are four such skills which can be used to describe the learning structure of the behavior (i.e., what has to be learned). See: *CHAIN; DISCRIMINATION; and GENERALIZATION.*	B G	165-201 18
CONDITIONS OF PERFORMANCE	A COMPETENCY ANALYSIS seeks to identify under what post-instructional conditions the CRITERION BEHAVIOR is to be exhibited. Two such conditions, RECALL and TRANSFER are possible. See: *RECALL; and TRANSFER.* Also see: *COMPONENT SKILLS.*	B G	233-241 18
CRITERION BEHAVIOR	The total behavior which is to be taught and which the the learner is expected to exhibit post-instruction. Also see: *SubCRITERION BEHAVIOR; TERMINAL BEHAVIOR.*	A D	8 60-78
CRITERION OBJECTIVES	A statement of what the learner is expected to be able to do post-instruction; including a description of the INPUTS he will be presented with, the ACTION he must take, and the OUTPUT he must produce. Also see: *SubCRITERION OBJECTIVES; PREPARATORY OBJECTIVES.*	D	60-78
CRITERION TEST	A test requiring the exhibition of the CRITERION BEHAVIOR under conditions identified in a statement of CRITERION OBJECTIVES. Also see: *SubCRITERION TEST; and DIAGNOSTIC TESTS.*	F	30-39
CUE	An INPUT which is designed to elicit or prompt the exhibition of observing or attending behavior on the part of the learner or the exhibiting of the actual behavior to be practiced. Also see: *PROMPTING; and BEHAVIOR CONTROL.*	G J	89-98 186, 7
DEVELOPMENTAL TRYOUT	The administration of an instructional program to a relatively large sample of the target audience as a means of assessing the effectiveness of the program and to provide data to use in reusing it. The record of three stages of evaluation. Also see: *FIELD TESTING; and INFORMAL TRYOUT.*	J	100-5
DISCRIMINATION	Distinguishing in seeing the difference between INPUTS or INPUT CLASSES, which permits differential responses to be made to them. One of the four component skills. Also see: *ASSOCIATION; CHAINS; and GENERALIZATION.*	B	169-178
DIAGNOSTIC TESTS	Tests used to identify the nature of learning failures which have occurred; results are used to identify program weaknesses. Also see: *CRITERION TESTS.*	F	79-107

Term	Definition	Additional Information	
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EDITING	The second or intermediate of three levels of responding. A correct or incorrect performance is provided the learner (in a program or on a test) and he is required to edit or change it (if it is incorrect). Also see: *PRODUCTION; and RECOGNITION.*	B G I	258, 9 82, 3 97-100
ENVIRONMENTAL	One of the classifications of INPUTS and/or OUTPUTS serving as a basis for media selection. ENVIRONMENTAL refers to people, things, or events. Also see: *VERBAL; SYMBOLIC; and AUDIO.*	B	254-256
FEEDBACK	During an instructional program learners are required to practice what it is they are supposed to learn. Correct answers are subsequently provided in order to give him feedback as to his own corrections. Also see: *REINFORCEMENT.*	G	188-201
FIELD TESTING	The administration of an instructional program to a very large sample of the target audience (not to provide data for revision purposes but to provide final data on the effectiveness of the program.) The third of three stages of evaluation. Also see: *DEVELOPMENTAL TRYOUT; and INFORMAL TRYOUT.*	J	224-9
GENERALIZATION	See the similarity among INPUTS belonging to the same INPUT CLASS which serves as the basis for taking the same ACTION in response to them. One of the four component skills. Also see: *ASSOCIATIONS; CHAINS; and DISCRIMINATION.*	B	169-178
INFORMAL TRYOUT	The administration of an instructional program to a small sample of the target audience to yeidl data about program effectiveness and to allow its iterative revision. The first of three stages of evaluation. Also see: *DEVELOPMENTAL TRYOUT; and FIELD TESTING.*	J	22-47
INPUT	One of the three elements into which behavior can be analyzed. The term refers to the stimulus or stimulus situation with which a person is faced and to which he must make a response (i.e., take an ACTION). Also see: *ACTION; and OUTPUT.*		
INPUT CLASS	An ACTION is taken in response to an INPUT. Sometimes an INPUT may belong to a class of INPUTS which are functionally similar to an another; i.e., they all require t the same ACTION be taken in response to them.	B	136-9
INPUT MODE	The type or category of INPUT to which ACTIONS are taken. See: *VERBAL; SYMBOLIC; ENVIRONMENTAL; and AUDIO.* Also see: *ACTION MODE; and OUTPUT MODE.*	B	250-261

Term	Definition	Additional Information	
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KNOWLEDGE DOMAIN	"PERFORMANCE" is used to describe such behaviors as: typing, doing an experiment, solving a problem, or composing music. "KNOWLEDGE DOMAIN" is used to describe such VERBAL behaviors as: giving a definition; interpreting or illustrating a principle. Also see: *PERFORMANCE; and TERMINAL BEHAVIOR.*	A	8
LEARNING ANALYSIS	An analysis designed to identify the properties of INPUTS in ACTIONS which potentially can interfere with the acquisition or learning of the four COMPONENT SKILLS. Also see: *COMPONENT SKILLS.*	B	210-231
MEDIA	Devices or things which are capable of accommodating the MODES of INPUTS, ACTIONS, or OUTPUTS and of creating the opportunity to practice CRITERION BEHAVIOR.	G	235-241
MODE	The characteristics of INPUTS, ACTIONS, or OUTPUTS. Various classification systems may be used to categorize them. Also see: *INPUT MODE; ACTION MODE; and OUTPUT MODE.*	B	250-263
MODE ANALYSIS	An identification of the type of INPUT, ACTION, or OUTPUT involved in the CRITERION BEHAVIOR. It serves as a basis for selecting media which can allow the learner to practice the CRITERION BEHAVIOR. Also see: *INPUT MODE; ACTION MODE; and OUTPUT MODE.*	B	250-263
MOTOR	One of the classifications of ACTIONS serving as a basis for media selection. MOTOR refers to the overt, physical nature of the ACTIONS (writing, walking, or manipulated). Also see; *PERCEPTUAL; VOCAL; and SUBVOCAL.*	B	258, 9
NON-REALISTIC	A characteristic of INPUTS/OUTPUTS (in MODE ANALYSIS). Reproductions of or fabrications of actual INPUTS; i.e., pictures or drawings of people, objects, or events. Also see: *REALISTIC.*	B	254
OBJECTIVES	A statement or description of what the learner is expected to be able to do upon completing instruction. It includes a description of: what he will be given; the behavior he is expected to exhibit; and what he will produce as a result.		
OUTPUT	The stimulus situation which is created when an ACTION (or response) is made. Also see: *INPUT; and ACTION.*		

Term	Definition	Additional Information Vol.	Additional Information Page
OUTPUT MODE	The type or category of OUTPUT which results when an ACTION is taken. See: *VERBAL; SYMBOLIC; ENVIRONMENTAL; and AUDIO.* Also see: *INPUT MODE; and ACTION MODE.*	B	250-
PERCEPTUAL	One of the classifications of ACTIONS serving as a basis for media selection. PERCEPTUAL refers to the requirement of identifying INPUTS which may be presented. Also see: *MOTOR; VOCAL; and SubVOCAL.*	B	258
PERFORMANCE	"PERFORMANCE" is used to describe such behaviors as: typing, doing an experiment, solving a problem, or composing music. It should be distinguished from the verbal behaviors formed in a KNOWLEDGE DOMAIN. Also see: *KNOWLEDGE DOMAIN.*	A	8
PREPARATORY OBJECTIVES	Altered versions of CRITERION or SubCRITERION OBJECTIVES; the change is away from the way INPUTS or ACTIONS are expected or a CRITERION TEST. The change is designed for instructional purposes to make learning easier. Also see: *CRITERION OBJECTIVES; and SubCRITERION OBJECTIVES.*	D	79-103
PREPARATORY PROGRESSION	The sequence of practice which takes the learner from his entering proficiency level to the final or criterion proficiency level. The sequence provides graduated difficulty levels.	G G	73-5 65-155
PRODUCTION	The third or most difficult of three levels of responding. The learner is given only an INPUT (which is part of the CRITERION BEHAVIOR) and interact any assistance is required to produce or exhibit the correct ACTION or series of ACTIONS. Also see: *RECOGNITION; and EDITING.*	B G I	258, 9 82, 3 97-100
PROFICIENCY	The mastery of the behavior to be learned.		
PROMPTING	The provision of assistance to the learner which makes it easier for him to answer questions or exhibit the trend of behavior required of him. Also see: *CUES.*	G G	92 176-187
REALISTIC	A characteristic of INPUTS/OUTPUTS (in MODE ANALYSIS). The term refers to actual objects, events, or people.	B	255

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RECALL	INPUTS encountered during instruction are presented post-instruction or ACTIONS actually taken during instruction are required to be taken post-instruction. This type of behavior usually requires RECALL, one of two CONDITIONS REINFORCEMENTS. Also see: *TRANSFER; and CONDITIONS OF PERFORMANCE.*	B G	233-241 18
RECOGNITION	The first or easiest of three levels of responding. The learner is usually required to select correct answers from among options provided him. Also see: *EDITING; and PRODUCTION.*	B G I	258, 9 82, 3 97-100
REINFORCEMENT	Satisfying events, objects, or behavior which follows practice and which makes what was practiced more likely to recur. Also see: *FEEDBACK.*	G	202-213
SHAPING	A procedure for gradually improving the performance of a learner; he is typically reinforced for each increment (amount of work, duration of work, etc.) in performance until he reaches a desired level of proficience. Also see: *REINFORCEMENT.*	G I	77-9 105-8
SIMULATION	The substitution of one type of INPUT, ACTION, or OUTPUT for these types which make up the CRITERION BEHAVIOR. The substitution is made either for logistical or instructional reasons. The substitition, nevertheless, attempts to retain key properties of the CRITERION BEHAVIOR.	E	48-64
STEP	One of three terms used to describe a UNIT of behavior. CRITERION BEHAVIORS are broken up into such units for convenience sake. A STEP is a unit of intermediate breadth. Also see: *TASK; SubSTEP; TASK DESCRIPTION.*	B	103-9
SubCRITERION BEHAVIOR	A self-contained portion of a CRITERION BEHAVIOR. Also see: *CRITERION BEHAVIOR.*	D	78-103
SubCRITERION OBJECTIVE	A statement describing a Sub-CRITERION or behavior including a description of what the learner will be presented with, what he will be expected to do, and what he should turn out. Also see: *CRITERION OBJECTIVE; and PREPARATORY OBJECTIVES.*	D	78-103
SubCRITERION TEST	A test referring the exhibition of a SubCRITERION BEHAVIOR under the conditions identified in a statement of SubCRITERION OBJECTIVES. Also see: *CRITERION TEST; and DIAGNOSTIC TEST.*	F	70-75

Term	Definition	Additional Information	
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SubSTEP	One of three terms used to describe a UNIT of behavior. CRITERION BEHAVIORS are broken up into such units for convenience sake. A SubSTEP is usually the narrowest unit. Also see: *TASK; and STEP.*	B	110-121
SubVOCAL	One of the classifications of ACTIONS serving as a basis for media selection. SubVOCAL refers to processes going on "in the head". Which are unobservable. Also see: *PERCEPTUAL; MOTOR; and VOCAL.*	B	258
SYMBOLIC	One of the classifications of INPUTS and/or OUTPUTS serving as a basis for media selection. SYMBOLIC refers to non-wordal symbols as: mathematical or musical symbols; or such Also see: *VERBAL; ENVIRONMENTAL; and AUDIO.*	B	254-256
TARGET AUDIENCE	The population which will take the instructional program being developed. The program will be described to suit the characteristics and/or needs of this population.	A	14
TASK	One of three terms used to describe a UNIT of behavior. CRITERION BEHAVIORS are broken up into such units for convenience sake. A TASK is the largest or broadest unit. Also see: *STEP; and SubSTEP.*	B	93-101
TASK ANALYSIS	The analysis of behavior to be taught and the identification of the specific conbination of COMPONENT SKILLS (i.e., the learning structure) which must be mastered if the behavior is to be exhibited correctly. Also see: *COMPONENT SKILLS.*	B	165-201
TASK DESCRIPTION	The breakdown of CRITERION BEHAVIORS into more manageable units (for descriptive and teaching purposes) and their description (generally) in everyday language. The take off point for subsequent conduct of TASK ANALYSIS. Also see: *TASKS; STEPS; SubSTEP; and TERMINAL BEHAVIOR.*	B	89-149
TERMINAL BEHAVIOR	A type of CRITERION BEHAVIOR; used to describe the VERBAL behaviors required in KNOWLEDGE DOMAINS. Also see: *KNOWLEDGE DOMAIN; and CRITERION BEHAVIOR.*	B	133-149
TRANSFER	INPUTS not encountered during instruction are presented post-instruction; ACTIONS not taken during instruction are required to be taken post-instruction. This type of behavior requires TRANSFER from what was practiced. Also see: *RECALL; COMPETENCY ANALYSIS; and CONDITIONS OF PERFORMANCE.*	B G	233-241 18

Term	Definition
TRANSIENT	A term used to [illegible] INPUTS which [illegible] surving automobiles [illegible] played, events).
VERBAL	One of the classifications of [illegible] serving as a basis for media selection. [illegible] to "words" or verbal signs [illegible] Also see: SYMBOL[illegible], [illegible]
VOCAL	One of the classifications of [illegible] for media selection. [illegible] animate objects [illegible] Also see: [illegible]

PURPOSE OF THIS FOLDOUT PAGE

The development of instructional materials involves many tasks, steps, and sub-steps. To make it easier for a trainee to learn them, this program concentrates on one sub-step at a time. The amount of information available in HANDBOOK volumes devoted to each sub-step may range from half a dozen pages to two or more dozen pages. There may also be multiple WORKBOOK exercises devoted to each sub-step.

There is the danger that as a trainee concentrates on any one sub-step he may lose sight of where in the total development process he is. He may have forgotten where he has been and he may not know where he is going.

Two recommendations are made to orient the trainee as to where he is at any given time:

(1) When working on materials related to any given sub-step, he should keep this INDEX volume open to the page which summarizes all the sub-steps subsumed under their parent STEP.

For example, TURN TO PAGE A-10 in this volume.

When working on the section in HANDBOOK A devoted to Sub-STEP A.3.2, he should keep the INDEX volume open to page A-10.

This identifies for him what sub-step preceded the one he is now learning to do and what the next sub-step will be.

(2) To have a BIG PICTURE of where he is in relation to larger tasks in the development process, he should keep this foldout page folded out at all times.

Open up this page now and inspect it.

OVERVIEW OF DEVELOPMENT PROCESS

Outputs of Each of Ten Tasks

Ⓐ = Plans for Data Collection
Ⓑ = Results of Analysis of Criterion Behavior
Ⓒ = Sequenced Sub-Criterion Behaviors and Separate Criterion Behaviors
Ⓓ = Statement of Objectives
Ⓔ = Simulation Plans
Ⓕ = Tests
Ⓖ = Instructional Strategies
Ⓗ = Plan to Accommodate Individual Differences
Ⓘ = An Instructional Program
Ⓙ = Evaluation Data and Revised Program

Which Outputs Are Treated As Inputs For the Creation of Other Outputs: In Sequence of Occurrence

INPUTS	OUTPUTS
	Ⓐ
Ⓐ	Ⓑ
Ⓑ	Ⓒ
Ⓑ+Ⓒ	Ⓓ *
Ⓑ+Ⓓ	Ⓔ
Ⓑ+Ⓓ+Ⓔ	Ⓕ
Ⓑ+Ⓓ+Ⓔ+Ⓕ	Ⓖ
Ⓑ+Ⓖ	Revised Ⓖ+Ⓗ
Ⓖ+Ⓗ Optional: Ⓑ+Ⓓ+Ⓕ	Ⓘ
Ⓘ+Ⓕ	Ⓙ
Ⓙ+Ⓘ	Revised Ⓘ+Ⓙ

*For each criterion behavior

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**No detail provided for this sub-step*

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STEP A.1

A.1 Identify the type of criterion behavior to be taught and the type of target audience to which it will be taught.

A.1.1 Identify the type(s) of criterion behavior to be taught.

A.1.2 Identify the type of target audience to be taught.

STEP A.1

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STEP A.2

A.2 Identify methods for obtaining information necessary to describe and analyze criterion behavior

A.2.1 Determine whether a model of criterion behavior is available and acceptable as a basis for curriculum or training program development.

A.2.2 Decide on methods for obtaining information needed to describe model of criterion behavior.

STEP A.2

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A.3 Select information sources needed to describe and analyze criterion behavior.

A.3.1 Identify information sources appropriate to the type of criterion behavior to be taught and to the types of information-gathering techniques selected.

A.3.2 Select from identified sources those who are appropriate to the target audience and to the types of analysis to be performed.

*A.3.3 Have experts selected for the above tasks review the adequacy of the earlier decision about model availability and acceptability. If necessary, modify plans for using information-collection techniques.

No detail provided for this sub-step.

STEP A.3

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STEP A.4

≠A.4 Plan the sequence in which information about criterion behavior will be collected.

A.4.1 Decide on the sequence in which the tasks and steps involved in criterion behavior will be described and recorded.

A.4.2 Decide on the sequence in which the various analyses of criterion behavior will be performed.

≠*Starting with this step, A.4, only two types of criterion behavior, PERFORMANCE and KNOWLEDGE DOMAIN, will be treated. There will be no further treatment of general cognitive skills and personal/social behavior. The treatment of "performance" in subsequent sections most closely approximates that required by these two other types of criterion behavior. Subsequent sect[illegible] will also provide no further treatment of theory-generated descriptions of models of criterion behavior.*

STEP A.4

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STEP A.5

Develop (or plan to use existing) information-collecting instruments and procedures.

A.5.1 Develop forms and procedures for obtaining and recording information needed to describe and analyze criterion behavior.

A.5.2(a) Select from available forms and procedures recommended when performance is to be described either through observation of an expert of through verbal report by an expert.

A.5.2(b) Select from available forms and procedures recommended when knowledge domain is to be described through judgments of an expert.

A.5.2(c) Select from available forms and procedures recommended when performance is to be described through reports of critical elements by many job holders (or those associated with them).

A.5.3 Try out and revise information-collection instruments and procedures.

STEP A.5

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A.5(12)-(14)	SUPPLEMENTARY TASK DESCRIPTION/TASK ANALYSIS
A.5(15)-(16)	CRITICAL INCIDENT FORM

**The developer who vidhes to use any of the FORMS appearing in the HANDBOOK for his own developmental efforts may use the blank versions which appear in this subvolume as masters.*

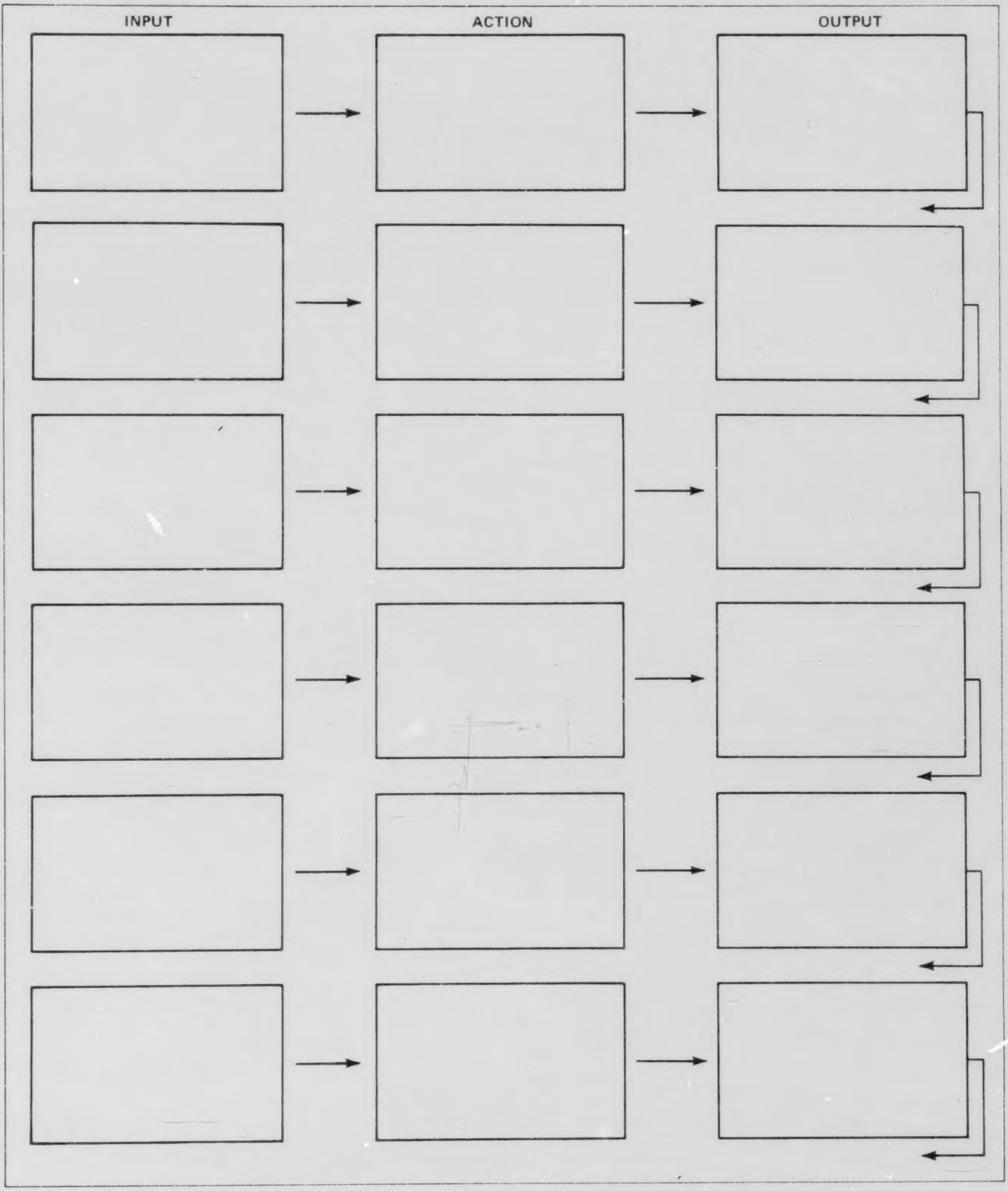
Form A-5 (1)

SUMMARY OF TASKS

Form A-5 (2)

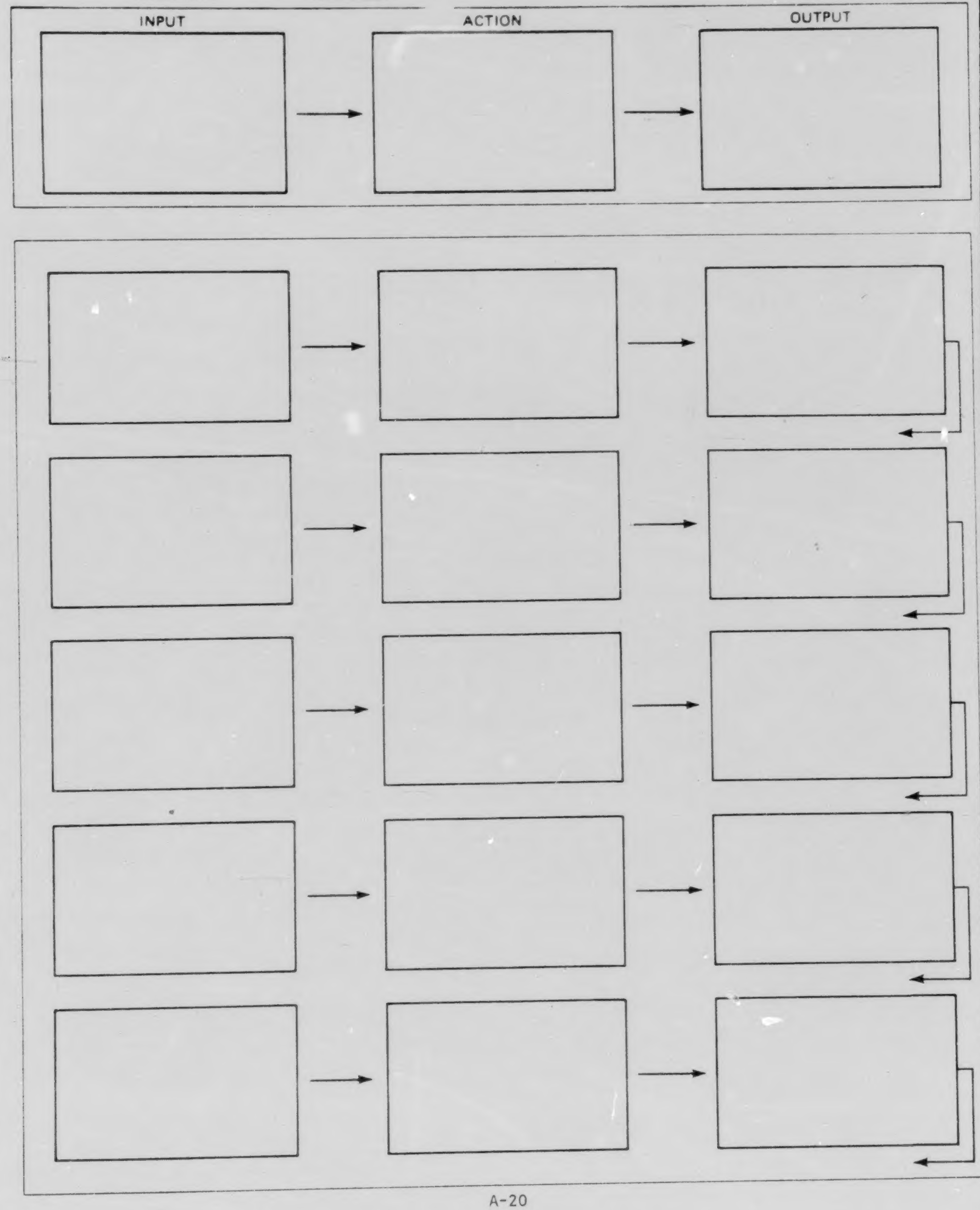
for TASK ☐

SUMMARY OF STEPS


INPUT
ACTION
OUTPUT

Form A-5 (3)

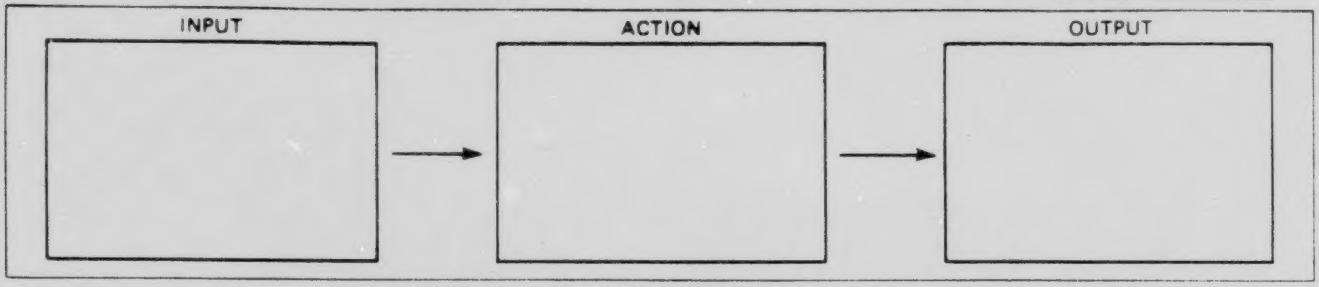
for TASK ☐ *STEP* ☐ SUMMARY OF **Sub-STEPS**


INPUT
ACTION
OUTPUT

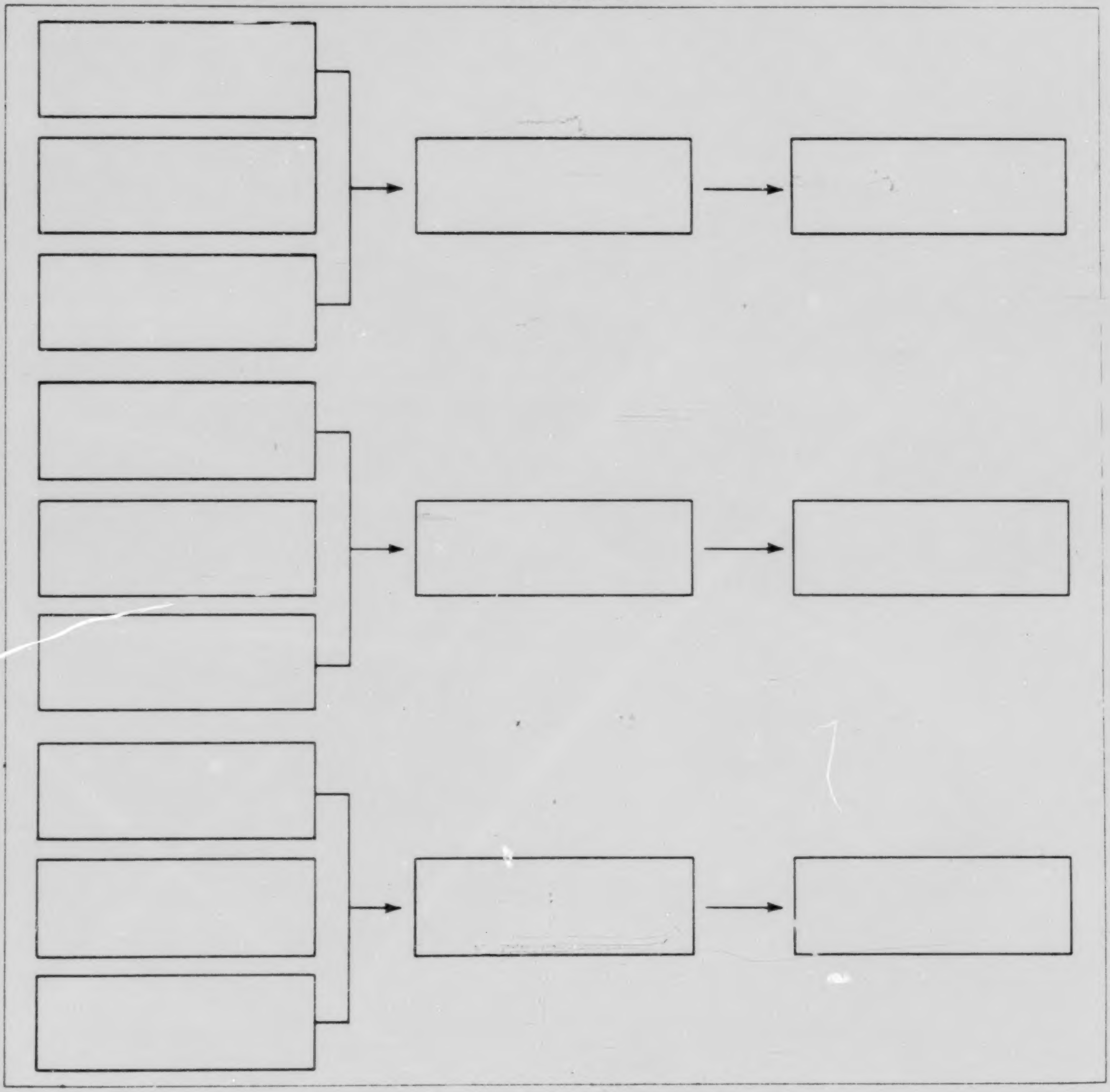
Form A-5 (5) SUPPLEMENTARY

for TASK ☐ *STEP* ☐ *Sub-STEP* ☐

a. TASK DESCRIPTION


INPUT
ACTION
OUTPUT

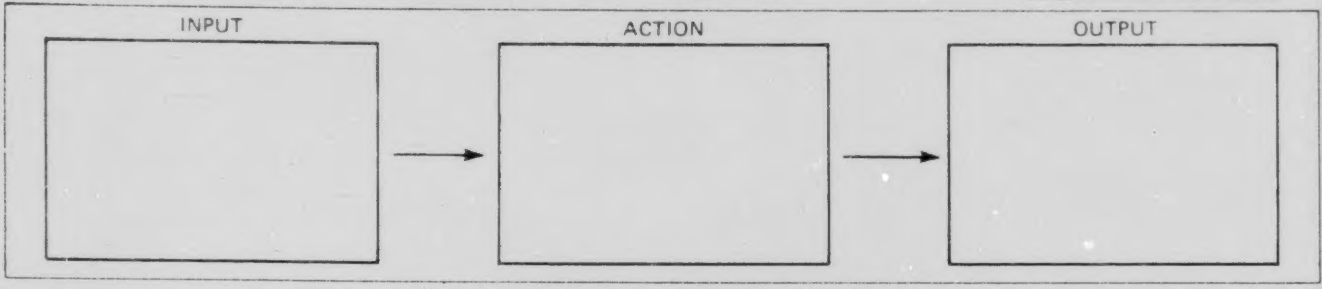
b. TASK ANALYSIS



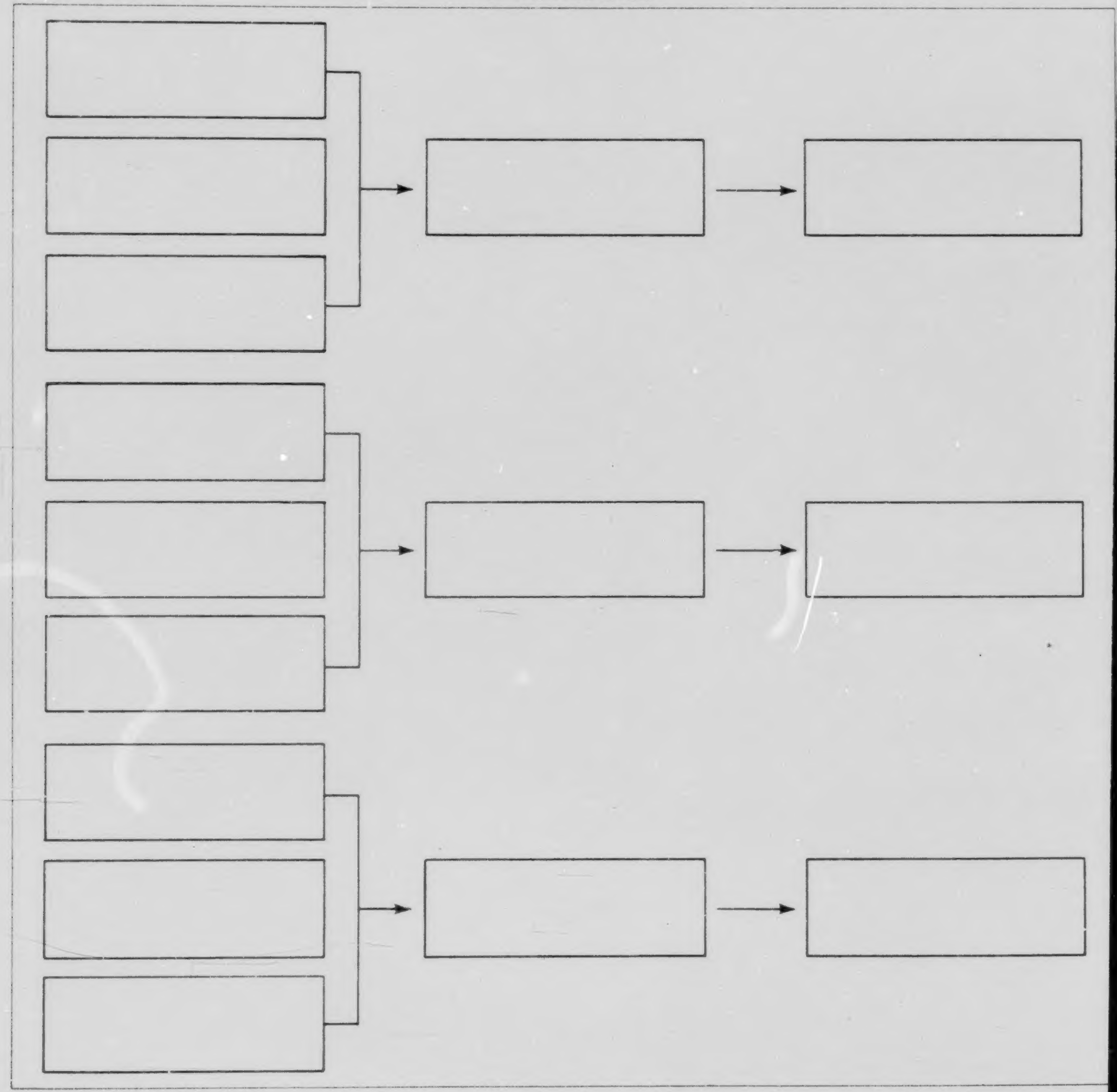
Form A-5 (4)

for TASK ☐ *STEP* ☐ *Sub-STEP* ☐

a. TASK DESCRIPTION


INPUT
ACTION
OUTPUT

b. TASK ANALYSIS



COMPETENCY ANALYSIS ▽

c. LEARNING ANALYSIS

level of difficulty in acquiring

d. MODE ANALYSIS

INPUT

DISCRIMINATIONS

due to ▽	hi	med	lo
similarity			
No. of properties			
No. of inputs			

GENERALIZATIONS

	hi	med	lo
dissimilarity			
No. of properties			
No. of inputs			

		symbolic	verbal	environmental
VISUAL	realistic			
	reproduced/ fabricated			
AUDIO	realistic			
	reproduced/ fabricated			

OTHER: Kinaesthetic, smell, taste

recall ☐

transfer ☐

ACTION/ CHAIN

ASSOCIATIONS

due to ▽	hi	med	lo
No. of associations			
associative strength of other actions			

GENERALIZATIONS

	hi	med	lo
integrative strength of action			

CHAINS

	hi	med	lo
length of chain			
output discrimination problems			
associative strength of other actions			

	perceptual	motor	vocal	sub/vocal
recognition				
editing				
production				

recall ☐

transfer ☐

OUTPUT

DISCRIMINATIONS

due to ▽	hi	med	lo
similarity			
No. of properties			
No. of inputs			

GENERALIZATIONS

	hi	med	lo
dissimilarity			
No. of properties			
No. of inputs			

		symbolic	verbal	environmental
VISUAL	realistic			
	reproduced/ fabricated			
AUDIO	realistic			
	reproduced/ fabricated			

OTHER: Kinaesthetic, smell, taste

recall ☐

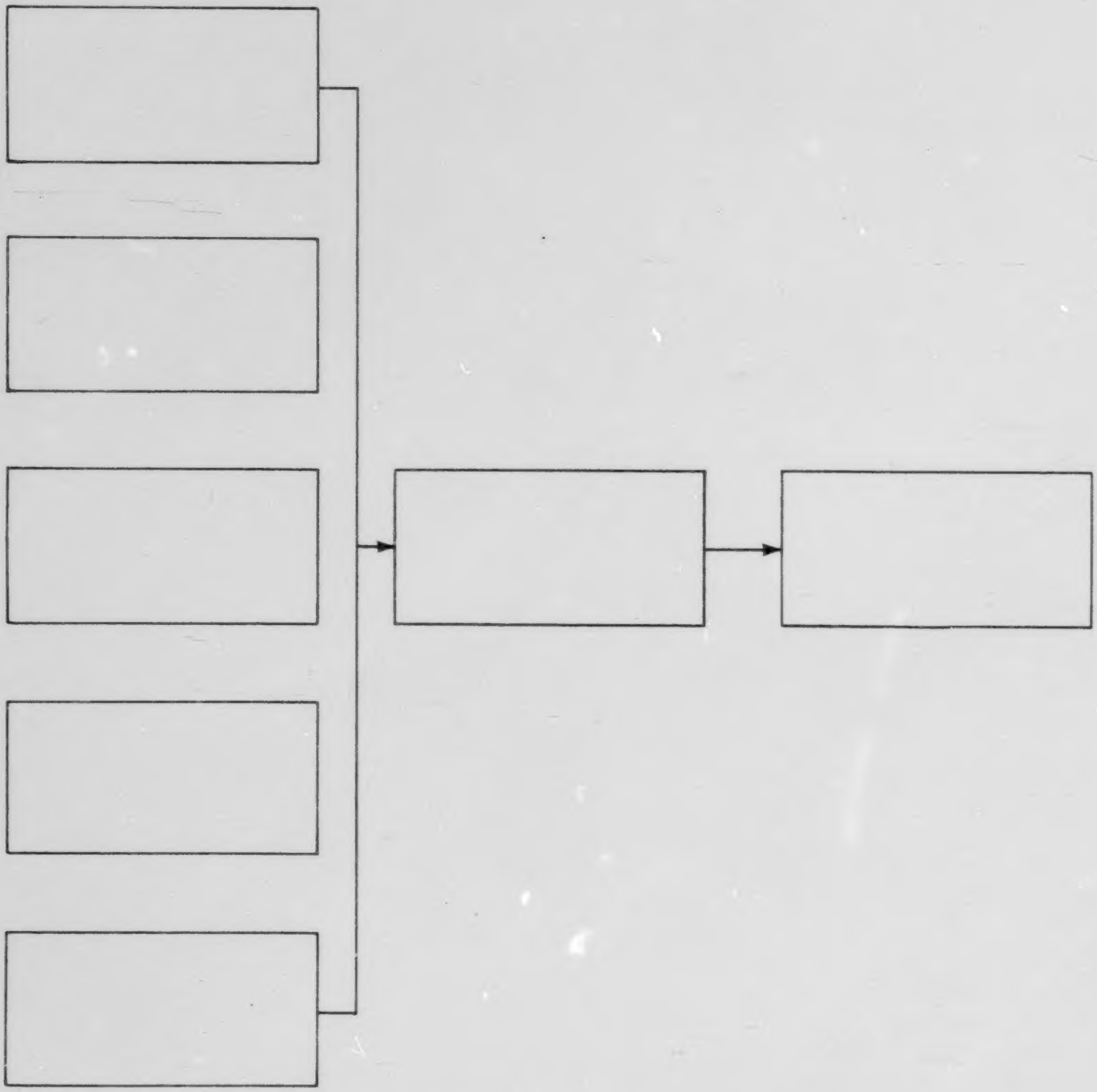
transfer ☐

Form A-5 (6) SUPPLEMENTARY

for TASK ☐ *STEP* ☐ *Sub-STEP* ☐ *CELL* ☐ a. TASK DESCRIPTION

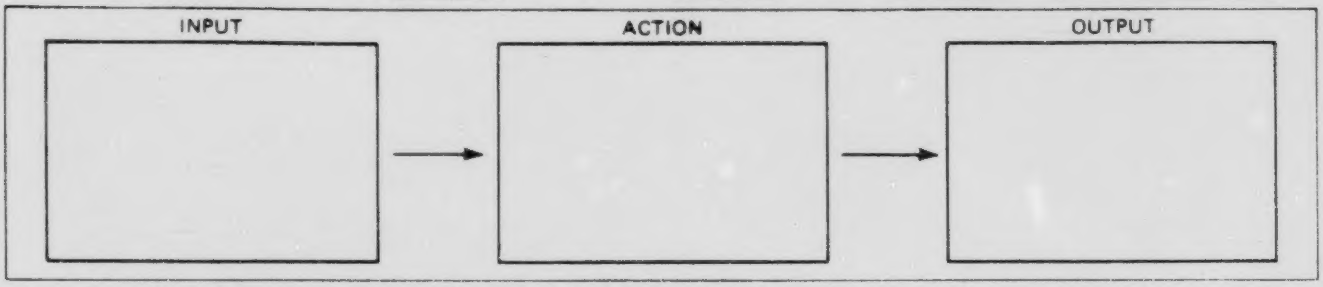
INPUT → ACTION → OUTPUT

b. TASK ANALYSIS

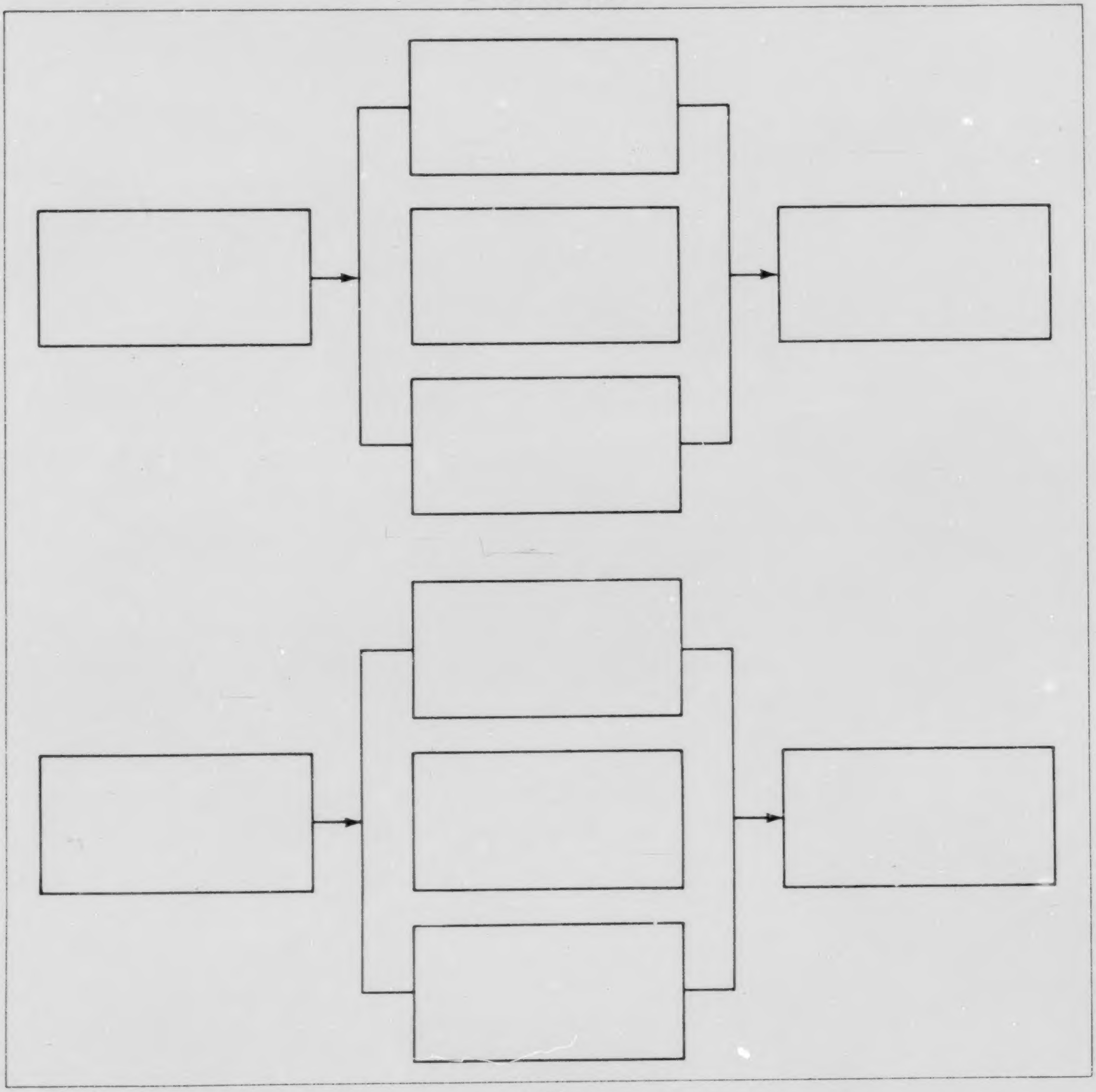


Form A-5 (7) SUPPLEMENTARY

for TASK ☐ *STEP* ☐ *Sub-STEP* ☐ *CELL* ☐ **a.** TASK DESCRIPTION


INPUT
ACTION
OUTPUT

b. TASK ANALYSIS



Form A-5 (8)

FOR SUMMARY OF AREAS
TOPICS

Form A-5 (9) *for AREA* ☐ *TOPIC* ☐ FOR SUMMARY OF Sub-TOPICS

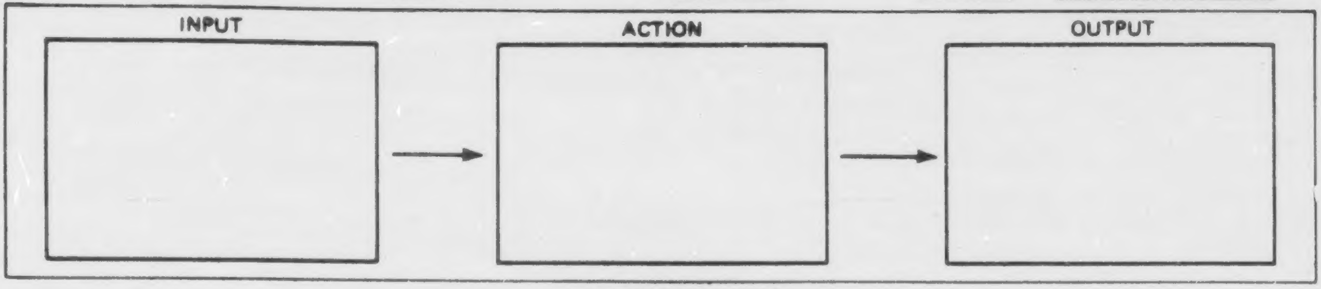
Form A.5(10)

For AREA ☐ TOPIC ☐ Sub-TOPIC ☐ FOUR COMPETENCY LEVELS

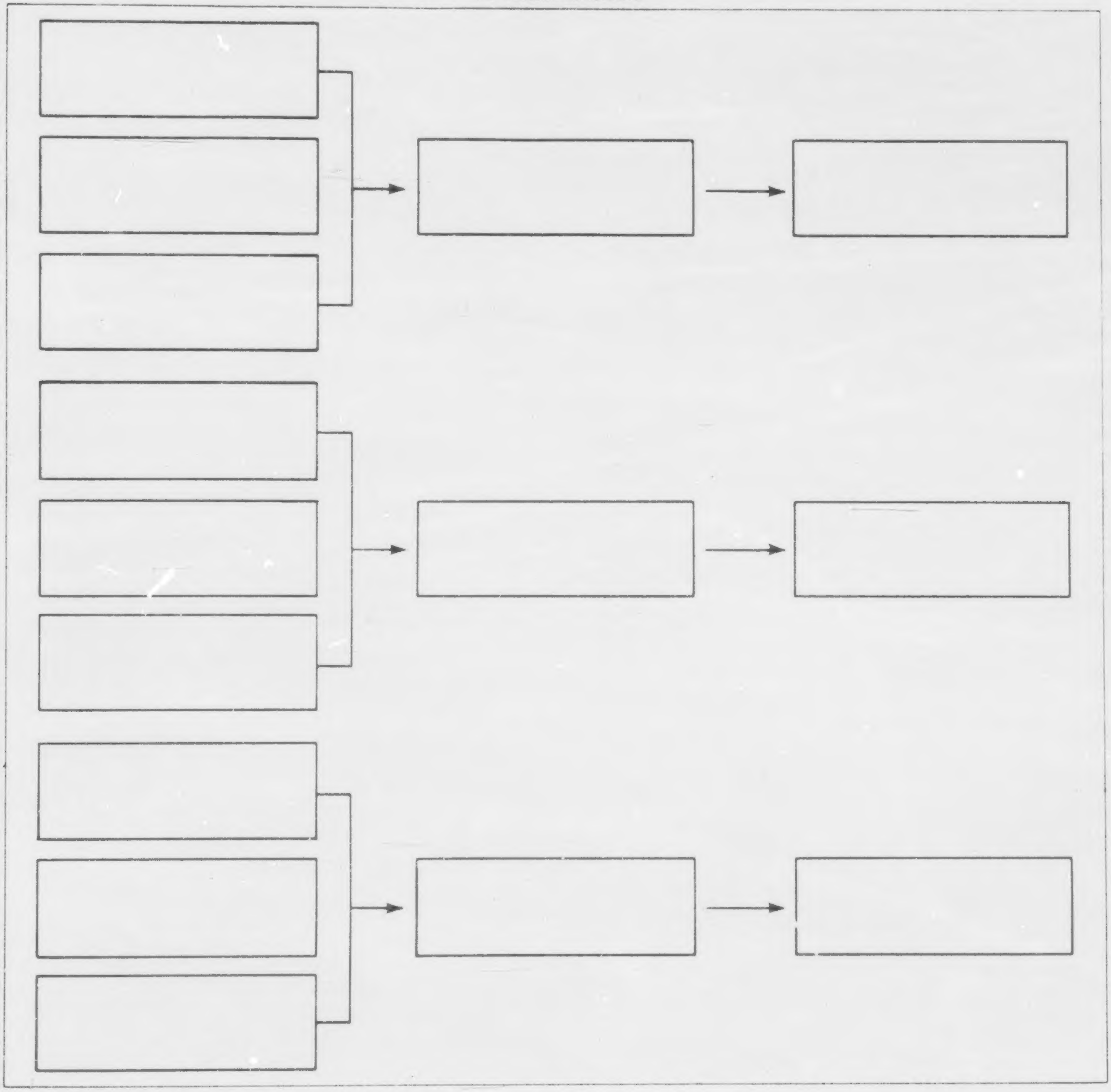
IV	*INPUT TRANSFER + ACTION TRANSFER* *new example of input class ⇄ new example of action/chain class*	
III	*INPUT TRANSFER + ACTION RECALL* *new example of input class ⇄ specific action/chain*	
II	*INPUT RECALL + ACTION TRANSFER* *specific input ⇄ new example of action/chain class* *old example of input class ⇄ new example of action/chain class*	
I	*INPUT RECALL + ACTION RECALL* *specific input ⇄ specific action/chain* *old example of input class ⇄ specific action/chain*	

Form A.5(12) SUPPLEMENTARY

for AREA ☐ *TOPIC* ☐ *Sub-TOPIC* ☐ *BEHAVIOR* ☐ **a. TASK DESCRIPTION**


INPUT
ACTION
OUTPUT

b. TASK ANALYSIS



Form A-5 (11)

for AREA ☐ *TOPIC* ☐ *Sub-TOPIC* ☐ *BEHAVIOR* ☐ a. **TASK DESCRIPTION**

INPUT → **ACTION** → OUTPUT

b. TASK ANALYSIS

COMPETENCY ANALYSIS ▽

c. LEARNING ANALYSIS

level of difficulty in acquiring

d. MODE ANALYSIS

INPUT

recall ☐

transfer ☐

DISCRIMINATIONS

due to ▽	hi	med	lo
similarity			
No. of properties			
No. of inputs			

GENERALIZATIONS

	hi	med	lo
dissimilarity			
No. of properties			
No. of inputs			

		symbolic	verbal	environmental
VISUAL	realistic			
	reproduced/ fabricated			
AUDIO	realistic			
	reproduced/ fabricated			

OTHER: Kinaesthetic, smell, taste

ACTION/ CHAIN

recall ☐

transfer ☐

ASSOCIATIONS

due to ▽	hi	med	lo
No. of associations			
associative strength of other actions			

GENERALIZATIONS

	hi	med	lo
integrative strength of action			

CHAINS

	hi	med	lo
length of chain			
output discrimination problems			
associative strengtn of other actions			

	perceptual	motor	vocal	sub/vocal
recognition				
editing				
production				

OUTPUT

recall ☐

transfer ☐

DISCRIMINATIONS

due to ▽	hi	med	lo
similarity			
No. of properties			
No. of inputs			

GENERALIZATIONS

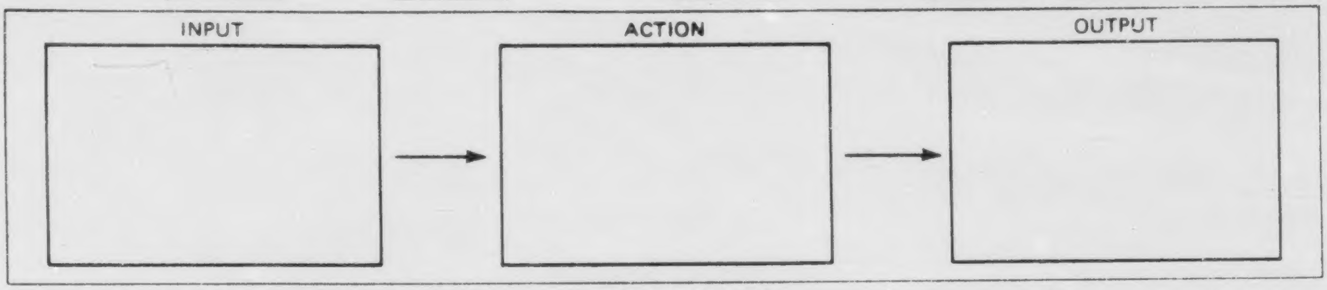
	hi	med	lo
dissimilarity			
No. of properties			
No. of inputs			

		symbolic	verbal	environmental
VISUAL	realistic			
	reproduced/ fabricated			
AUDIO	realistic			
	reproduced/ fabricated			

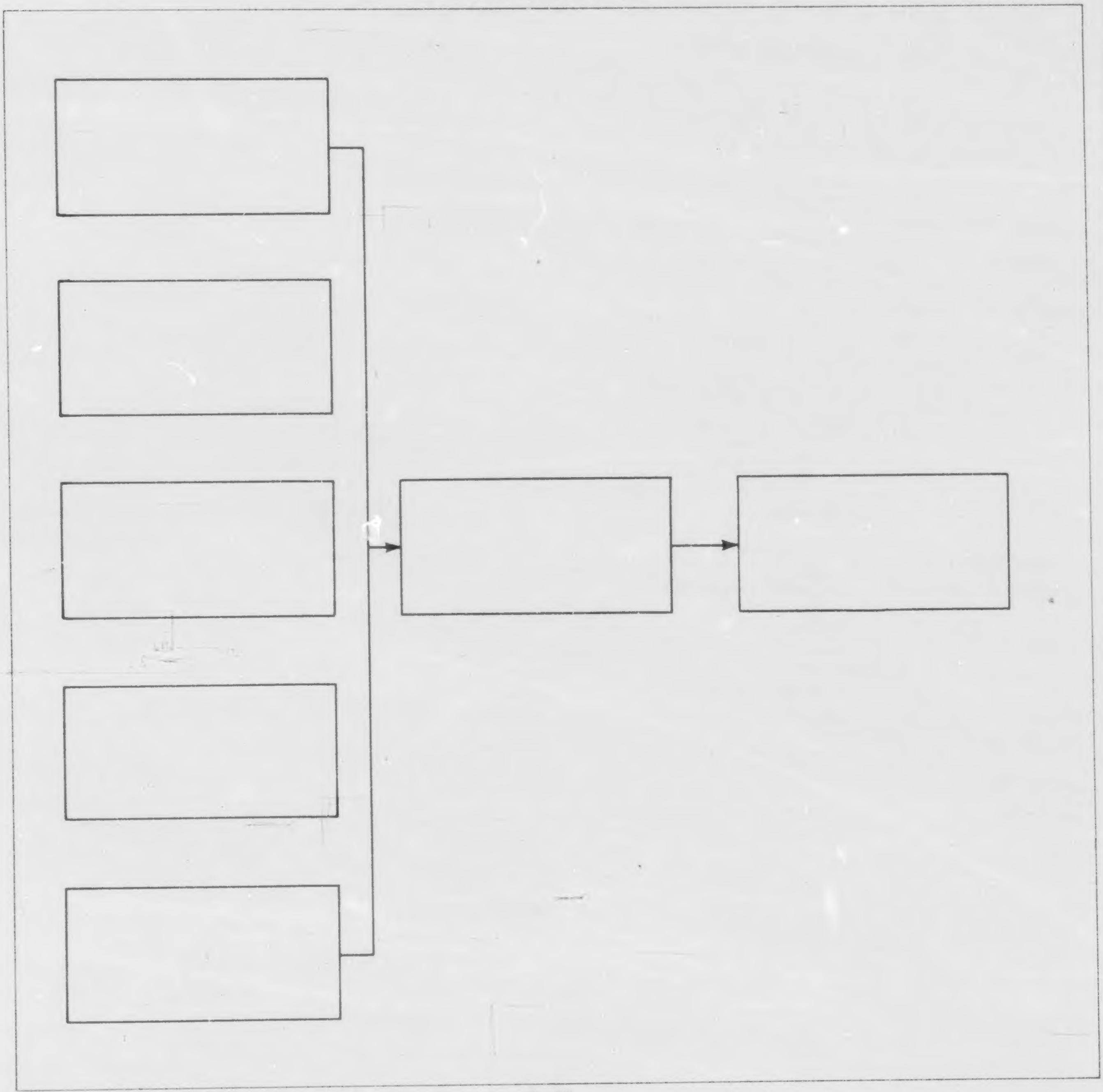
OTHER: Kinaesthetic, smell, taste

Form A-5 (13) SUPPLEMENTARY

for AREA ☐ *TASK* ☐ *Sub-TOPIC* ☐ *BEHAVIOR* ☐ **a. TASK DESCRIPTION**

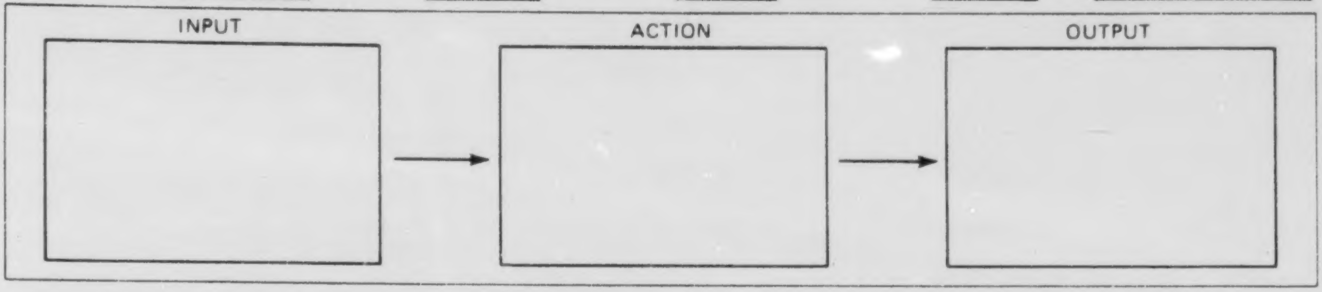

INPUT
ACTION
OUTPUT

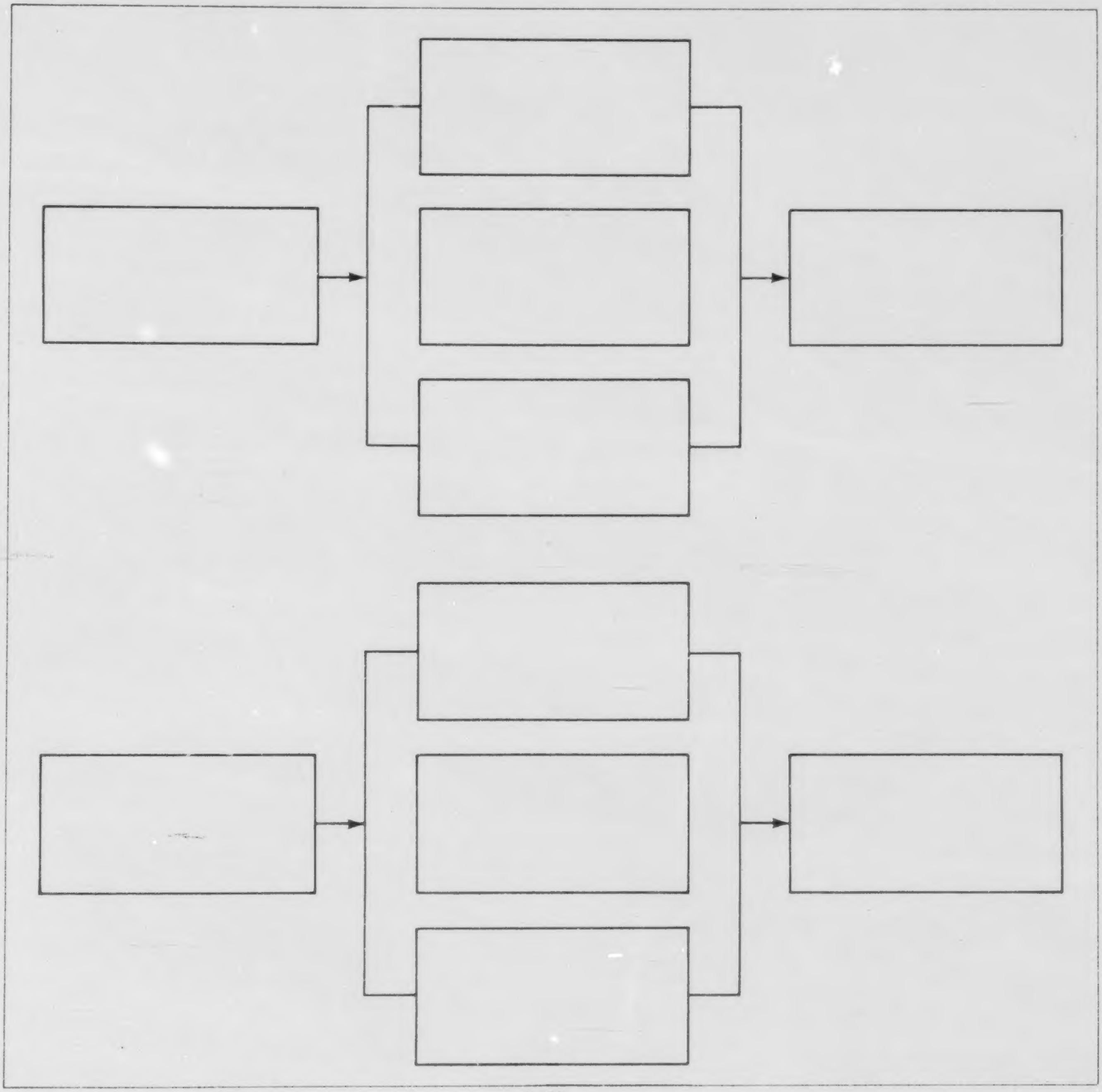
b. TASK ANALYSIS



Form A.5(14) SUPPLEMENTARY

for AREA *TOPIC* *Sub-TOPIC* *BEHAVIOR* a. TASK DESCRIPTION


INPUT
ACTION
OUTPUT



orm A.5(15)

for TASK ☐ STEP ☐ Sub-STEP ☐ a. **TASK DESCRIPTION**

	1. INPUT (noun phrase)	2. ACTION (verb)	3. OUTPUT (noun phrase)
A.	*What was the specific* *-Problem* *-Condition* *-Situation* *-Signal* *-Object* *-People or their behavior* *-Event* *which started, prompted, or led to your action?*	*What specifically did you/he do that was wrong?*	*What was the specific* *-Result* *-Product* *-Outcome* *that was: wrong, unsuccessful, a failure, or not up to standards?*
B.	a. →	Wrong Action You Took b. →	Bad Outcome c.
C.	→	Right Action to Take →	Correct Outcome
D.	Other INPUT Situation d. →	→	Correct Outcome

DESCRIPTION OF AN EFFECTIVE CRITICAL INCIDENT

INSTRUCTIONS

Think of the last time you did a particularly effective job of

____.
task, sub-step, sub-sub-step

INPUT *e.g.,* *-Problem* *-Condition* *-Situation* *-Signal* *-Object* *-Event* *-People or their behavior*	What was the specific situation or occasion which prompted you or led you to do what you did?
▼	
ACTION *e.g., What you did*	What, specifically, did you do that was effective?
▼	
OUTPUT *e.g.,* *-Result* *-Outcome* *-Product*	What was the specific outcome that resulted from the action you took? Why was your action effective?

DESCRIPTION OF AN INEFFECTIVE CRITICAL INCIDENT

INSTRUCTIONS

Think of the last time you did a particularly ineffective job of

____.

task, sub-step, sub-sub-step

INPUT *e.g.,* *-Problem* *-Condition* *-Situation* *-Signal* *-Object* *-Event* *-People or their behavior*	What was the specific situation or occasion which prompted you or led you to do what you did?
ACTION *e.g., What you did*	What, specifically, did you do that was ineffective?
OUTPUT *e.g.,* *-Result* *-Outcome* *-Product*	What was the specific outcome that resulted from the action you took? Why was your action ineffective?

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TASK

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B COLLECT AND ANALYZE DATA ABOUT CRITERION BEHAVIOR B

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B.1.3 Collect and perform preliminary analysis of critical incidents 19

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* *B.1 and B.2 are alternative, not successive, steps*

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STEP B.1
BEGINS ON THE NEXT PAGE

STEP B.1

B.1 Collect description of critical elements of criterion behavior from (or about) many job holders.*

**With the completion of Sub-STEP B.1.5 (below), additional analyses of criterion behavior are performed as per the steps beginning with Step B.3.3.*

B.1.1 Determine how many individual descriptions of criterion behavior are required and how many informants should be sampled to provide them.

B.1.2 Identify the type(s) of informants to use and the methods for obtaining information from them.

B.1.3 Collect and perform preliminary analysis of critical incidents.

B.1.4 Categorize and (when appropriate) sequence critical incidents.

B.1.5 Assess the reliability of the categorization of incidents and revise the categories when necessary.

STEP **B.1**

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STEP B.2

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B.2.1 Schedule the simultaneous or successive collection of different types of information needed for the analysis of criterion behavior.

B.2.2 Plan the order in which information about the various constituent parts of criterion behavior will be collected.

B.2.3 Plan the elimination of redundant information collection and recording.

STEP B.2

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STEP B.3

B.3 Collect "task description" information about criterion behavior.≠

≠For relatively non-complex "performance" start at B.3.3.

B.3.1 Collect description of criterion behavior at the highest level of generality: "performance" TASKS.

B.3.2 Collect description of criterion behavior at an intermediate level of generality: "performance" STEPS.

B.3.3 Collect description of criterion behavior at the lowest level of generality: "performance" Sub-STEPS (or Sub-Sub-STEPS).

// Not a sequence

B.3.4* Collect information organizing "knowledge domain" into units at varying levels of generality.

B.3.5* Collect descriptions of terminal behaviors indicating mastery in a "knowledge domain."

**For KNOWLEDGE DOMAINS only.*

STEP B.3

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**For KNOWLEDGE DOMAIN only.*

STEP B.4

B.4 Collect "task analysis," "learning analysis," and "competency analysis" information about criterion behavior.*

**Sub-Steps B.4.2-B.4.5 are performed in sequence for each lowest level task description, and then, the complete sequence is repeated for the next (lowest level) task description obtained. For KNOWLEDGE DOMAIN, the description of each terminal behavior on FORM A.5(10) is the lowest level obtained.*

B.4.1 Organize and store completed task description forms.

B.4.2 Identify and diagram discriminations, generalizations, and associations involved for each lowest level task description.

B.4.3 Determine whether the task analysis information obtained is at a sufficient level of detail; probe for and record additional information when necessary.

B.4.4 Perform a learning analysis for barriers to the learning of discriminations, generalizations, associations, and chains.

B.4.5 Identify and record on each set of diagrams information relevant to recall and transfer requirements.

STEP B.4

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STEP B.5

B.5* Collect information necessary to perform a mode analysis of inputs, actions, and outputs for each Sub-STEP or each criterion behavior.

**Can be done while collecting task analysis information or at its conclusion (or started during task analysis and checked and completed afterward).*

B.5.1 Inspect task analysis diagrams and classify INPUT, ACTION, and OUTPUT modes.

STEP B.5

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C.3.1 Estimate how much of a Sub-Criterion behavior (or a criterion behavior) can be learned in an instructional hour 75

C.3.2 Group task analysis results describing behaviors which can be taught in each instructional hour 85

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STEP C.1

C.1 Sequence task analysis results for all the Sub-Criterion behaviors which make up each criterion behavior.

C.1.1 Sequence task analysis information describing all Sub-STEPS (or terminal behaviors) which make up each Sub-Criterion behavior.

C.1.2 Sequence task analysis information describing all Sub-Criterion behaviors which make up each criterion behavior.*

**There is ample opportunity during TASK "G" (STRATEGY FORMULATION) to change sequencing decisions in light of additional information.*

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C.2.1 Review task analysis results for all separate criterion behaviors for all properties relevant to sequencing decisions.

C.2.2 Sequence task analysis results for all criterion behaviors.

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C.3 Create instructional units.

C.3.1 Estimate how much of a sub-criterion behavior (or a criterion behavior) can be learned in an instructional hour.*

C.3.2 Group task analysis results describing behaviors which can be taught in each instructional hour.

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D.1.4 Make decisions about *direction* of performance for each objective 35
D.1.5 Make decisions about size of sample of performance to be used as evidence of mastery of an objective 45

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STEP D.1

D.1 Plan the formulation of objectives for each lesson.

D.1.1 Make decisions about the number and types of objectives and sub-objectives to develop for a lesson.

D.1.2 Make final decisions about recall/transfer requirements for each objective.

D.1.3 Make decision about availability to students of performance aids.

D.1.4 Make decisions about direction of performance for each objective.

D.1.5 Make decisions about size of sample of performance to be used as evidence of mastery of an objective.

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D.2.3 Develop a statement of objectives to accompany instructional materials to be given to students.

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D.2(2)	STATEMENT OF OBJECTIVES FOR STUDENTS

Form D.2(1)

LESSON ☐

SPECIFICATION OF OBJECTIVES

	GIVEN	STUDENT WILL	RESULTING IN
	Criterion Inputs ● mode: visual/verbal/etc. ● number of examples from class ● new and/or old examples ● typical/atypical conditions ● availability of performance aids	Criterion Actions ● mode: recognition, editing, production ● alternatives: new and/or old examples ● mode: perceptual/motor/vocal/sub-vocal	Criterion Outputs ● mode: visual/verbal/etc. ● limits, standards ● quantitative: amount /degree/time limits ● qualitative
1.			
2.			
3.			

Form D.2(2)

LESSON ☐

STATEMENT OF OBJECTIVES
FOR STUDENTS

	GIVEN	YOU WILL	YOU MUST LEARN TO
	Inputs • objects, people, events, words, symbols, etc. • their properties • examples: number, new or old • availability of performance aids • typical/atypical conditions • problem format e.g., single input vs. multiple choice	Actions • select, edit, or produce • type of action e.g., point to, label, write, classify, etc. **RESULTING IN** Outputs • objects, events, words, symbols, etc. • their properties (quantity/quality) • standards of acceptability	• distinguish between examples from ___ # ___ input classes • on the basis of ___ # ___ properties • see similarity among examples within each of the ___ # ___ input classes • [illegible] basis of ___ # ___ properties • ass[illegible] one of ___ # ___ actions wit[illegible] one of the ___ # ___ input classes • exhibit ___ # ___ alternative actions • exhibit the series of associations in the ___ chain
1.			
2.			
3.			

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SUB-STEPS

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E.1.2 Inspect task analysis diagrams and statements of objectives for logistical and/or instructional reasons for the need to provide simulation 11

E.1.3 Decide whether to simulate 29

E.2 Plan type of simulation to be used (when needed) 35

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E.2.3	Select a simulation plan which both meets instructional needs and does not create an unacceptable logistical burden	65

STEP E.1
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STEP E.1

E.1 Assess simulation needs.

E.1.1 Determine whether simulation decisions should be made for an individual lesson or for a series of lesson units.

E.1.2 Inspect task analysis diagrams and statements of objectives for logistical and/or instructional reasons for the need to provide simulation.

E.1.3 Decide whether to simulate.

STEP E.1

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E.1(1) SIMULATION DECISIONS

Form E.1(1)

LESSON ☐ OBJECTIVE ☐

SIMULATION DECISIONS

a. assessing simulation needs due to →

LOGISTICAL CONSIDERATIONS			INSTRUCTIONAL CONSIDERATIONS		
downtime	cost	danger	sampling	standardization	manipulation
☐	☐	☐	☐	☐	☐

b. planning simulation when needed

INPUT types	PROPERTIES: physical, psychological	SIMULATION PLANS: visual, audio, etc.
people man made objects natural objects events words symbols other		
ACTION types		
perceptual motor vocal sub-vocal		
OUTPUT types		
people man made objects natural objects events words symbols other		

STEP E.2

E.2 Plan type of simulation to be used (when needed).

E.2.1 Identify from task analysis diagrams and from mode analysis results key properties of inputs, actions, or outputs which require simulation. Record results.

E.2.2 Plan and record the simulation of inputs, actions, and outputs.

E.2.3 Select a simulation plan which both meets instructional needs and does not create an unacceptable logistical burden.

STEP E.2

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F.2 Develop tests for proficiency at criterion behavior which is taught in each instructional unit 27

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STEP F.1
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STEP F.1

F.1 Plan the development of tasks.

F.1.1 Determine the size of the instructional unit for which a set of tests will be developed.

F.1.2 Make decisions about the types of tests (and their number) in each set of tests which would be developed for each instructional unit.

F.1.3 Determine whether actual tests or storyboards for tests will be developed for each instructional unit.

STEP F.1

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F.2 Develop tests for proficiency at criterion behavior which is taught in each instructional unit.

F.2.1 Determine whether to test for product and/or for process.

F.2.2 Decide on the sample of criterion behavior to be covered in a criterion test.

F.2.3 Develop criterion test items or procedures.

F.2.4 Develop subcriterion test items or procedures.

STEP F.2

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FORM WHICH APPEARS (IN YELLOW) IN THE "F" SUBVOLUME

F.2(1) FORM FOR TEST DEVELOPMENT

F-8 /

Form F.2(1)

LESSON ☐ OBJECTIVE ☐ FORM FOR TEST DEVELOPMENT

"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
— Instructions — Question or Problem • • INPUTS (new/old) • • AIDS (when applicable)	
• • ANSWER OPTIONS (when applicable)	

"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
— ACTIONS (new/old) • • mode	

"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
— OUTPUT • • answers • • product — Type of Scoring — Standards for Scoring	

STEP F.3

F.3 Develop diagnostic tests to identify reason for failure to acquire the criterion behavior taught in each instructional unit.

F.3.1 Plan the use of results on criterion test items and on subcriterion test items in diagnosing type of learning failure that has occurred.

F.3.2 Develop diagnostic interview procedures to provide supplementary diagnostic information about results on criterion test items and on subcriterion items.

F.3.3 Develop diagnostic test items designed to identify specific types of learning failures.

STEP F.3

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STEP F.4

F.4 Try out and revise testing procedures.

F.4.1 Administer testing procedures to a sample of the target audience as a means of assessing and upgrading the mechanics of the testing procedures.

F.4.2 Perform an analysis of the target audience by administering the revised tests.

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G.1.2 Summarize and record results of learning analyses and performance competency analyses for all the separate SUB-STEPS making up the criterion behavior 15

G.1.3 Characterize criterion practice requirements 31

G.1.4 Design the actual form in which criterion behavior will be practiced 51

G.2 Design preparatory practice progressions 65

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G.2.2 Design examples of preparatory practice progressions 122

G.2.3 Characterize the input-action-output mode involved in the designed preparatory practice 157

G.3 Plan behavior control 167

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G.3.2 Identify methods for providing feedback to student as to the correctness of the outputs he has produced 189

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  - G.4.2 Make medium (media) selection based on instructional and logistical considerations 255

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STEP G.1

G.1 Design practice of each criterion behavior.

G.1.1 Collect and organize all data concerning each criterion behavior.

G.1.2 Summarize and record results of learning analyses and performance competency analyses for all the separate SUB-STEPS making up the criterion behavior.

G.1.3 Characterize criterion practice requirements.

G.1.4 Design the actual form in which criterion behavior will be practiced.

STEP **G.1**

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FORMS:

G.1(1) SUMMARY OF LEARNING AND PERFORMANCE PROBLEMS

G.1(2) PLAN INSTRUCTIONAL STRATEGIES

LESSON ☐ CRITERION OBJECTIVE ☐

SUMMARY OF LEARNING AND PERFORMANCE PROBLEMS

LEARNING

Sub-STEPS in a chain	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	FOR EACH ROW: % of H's/Total No. of Sub-STEPS
Discriminations among INPUTS																					
Generalizations across INPUTS																					
Associations between INPUTS and ACTIONS																					
Generalizations across ACTIONS																					
Chaining a series of associations																					

PERFORMANCE

Sub-STEPS in a chain	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	FOR EACH ROW: % of √'s/Total No. of Sub-STEPS
INPUT recall																					
INPUT transfer																					
ACTION recall																					
ACTION transfer																					

Form G 1(2)

LESSON ☐ *CRITERION BEHAVIOR* ☐

IA. Characterize Criterion Practice Requirements

PERFORMANCE	LEARNING PROBLEMS	PROBLEM SOURCE	MODE
☐ simulation ☐ aids available ☐ two directions 1 transfer 2 delayed basis ☐ recognition mode	INPUTS 3 discriminations 4 generalizations INPUTS & ACTIONS 5 associations 6 chains ACTIONS 7 generalizations ☐ partial proficiency	INPUTS A similarity (dis-) B No. of properties C No. of classes (or No. members/class) INPUTS & ACTIONS D existing associations E length of chain ACTIONS F integrative strength	INPUTS OUTPUT *i* verbal/symbolic *i* *ii* environmental *ii* *iii* audio *iii* *iv* non-realistic *iv* *v* transient *v* ACTIONS *vi* perceptual *viii* vocal *vii* motor *ix* sub-voc

IIA. Select Preparatory Practice Progression(s)

UNIT SIZE	MODE	PROMPTING/FADING	CONTENT	FREQUENCY or VARIATION
a. shaping gradual increases in quantity quality	b. R/E/P c. visual/verbal d. concrete/abstract e. procedures/principles	f. examples or demonstrations g. verbal cues h. visual cues i. diagramming, overviews	j. principles/procedures k. altered criterion/criterion l. errors/criterion m. editing/criterion n. backward chaining	o. repetition p. review q. varied examples

		2	A	B	C	D	E	F	*i*	*vi*	*vii*
1	a	o-p	g	g				g-j	e	h	j
3	b-q	i-o-p	g-h-k	i-g	i					h	
4	b-q	i-o-p	g-h	i-g	i-g				g	h	j
3+4	b-i-q	i-o-p	g-h	i-g	i-g				c-d-e-i		
5	b-o	i-o-p			i-g-o-p	b-g-l					
6	a-f-m-n	o-p					a-n				a-m-n
7	j	o-p						g-h-j			j

III. Plan Behavior Control

PROMPT • OBSERVATION • ATTENTION	PROVIDE FEEDBACK	REINFORCE PRACTICE	PROVIDE DELAYED REINFORCEMENT
Advance Organizers statement of objectives instructions *Cues* visual or verbal formats, diagrams checklists	*Correctness of Answers (Solutions)* standard available for comparison discrimination practice re: correct outputs	*Intrinsic Reinforcers* interesting materials *Extrinsic Reinforcers* social monetary activities grades	*Extrinsic Reinforcers* social monetary activities

B. Design Criterion Practice

	GIVEN as INPUT	STUDENT WILL take ACTION	RESULTING IN OUTPUT
EXAMPLE(S) properties of additional examples			

IB. Design Preparatory Practice Progression

IIC. Characterize

PROGRESSION	given as INPUT	student will take ACTION	resulting in OUTPUT
1st			
2nd			
3rd			

MODE

INPUTS		OUTPUTS
i	verbal/symbolic	i
ii	environmental	ii
iii	audio	iii
iv	non-realistic	iv
v	transient	v
	ACTIONS	
vi	perceptual	
vii	motor	
viii	vocal	
ix	subvocal	

V. Select Media

INPUT/OUTPUT DISPLAY

r.	print	s	environmental	t	devices
r.1	verbal	s.1	people (behavior)	t.1	film, TV
r.2	pictorial	s.2	objects	t.2	slides, projectors
		s.3	events	t.3	simulator
				t.4	audio-tape

	i verbal/symbolic		ii environmental		
INPUTS ➤ ▼	iii audio	visual	iii audio	visual v transient	visual non-v
realistic	s.1		s.2 s.3	s.3	s.1 s.2
iv non-realistic	t.4	r.1 r.2 t.1 t.2 t.3	t.4	t.1 t.3	t.2 t.3

ACTION CAPABILITY / RECORD CAPABILITY

performance accommodation		record capabilities	
t.3	simulator	u.	paper and pencil
s.2	objects, equipment (manipulanda)	t.1	film, TV
		t.4	audio tape

OUTPUTS ➤	i verbal/symbolic		ii environmental			
ACTIONS ▼	iii	iv	iii	iv	v	non-v.
vi & ix	t.4	u		u	[illegible]	
vii		u	t.4	u	[illegible]	[illegible] t.3
viii	t.4					

STEP G.2

G.2 Design preparatory practice progressions.

G.2.1 Select preparatory practice progression(s) appropriate to the type(s) of learning and performance problems.

G.2.2 Design examples of preparatory practice progressions.

G.2.3 Characterize the input-action-output mode involved in the designed preparatory practice.

STEP G.2

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G.3 Plan behavior control.

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G.3.2 Identify methods for providing feedback to student as to the correctness of the outputs he has produced.

G.3.3 Identify methods for reinforcing the student for perseverance at practice.

G.3.4 Identify methods for making reinforcers available to maintain performance beyond the instructional setting.

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G.4 Select media appropriate to the type of criterion and preparatory practice which has been designed.

G.4.1 Identify media possibilities appropriate to mode requirements of criterion and preparatory practice.

G.4.2 Make medium (media) selection based on instructional and logistical considerations.

STEP G.4

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STEP H.1
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STEP H.1

H.1 Plan the use of accommodation techniques to be uniformly applied to all members of the target population.

H.1.1 Identify administrative techniques to be used.

H.1.2 Identify instructional techniques to be used.

STEP H.1

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STEP H.2

H.2 Plan the use of accommodation techniques to be applied uniformly to sub-populations or variably to individual students.*

H.2.1 Identify techniques to be used to accommodate sub-populations.

H.2.2 Identify techniques to be used that are specific to individuals.

**This step is more likely to be performed for a whole course or a whole curriculum than for a single criterion behavior.*

STEP H.2

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STEP I.1
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STEP I.1

I.1 Plan the size and order of learning units.

I.1.1 Estimate how many parts of the criterion behavior can be effectively practiced at the same time.

I.1.2 Plan the order in which parts of the criterion behavior will be practiced.

STEP I.1

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STEP I.2

I.2 Prepare instructional materials or procedures.

I.2.1 Prepare instructional materials or procedures for each sub-criterion behavior.*

I.2.2 Prepare instructional materials or procedures integrating all sub-criterion behaviors that make up the criterion behavior.

**This is a sequential activity; i.e., following completion of materials for one sub-criterion behavior, the preparation of materials for the next sub-criterion behavior begins.*

STEP I.2

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I.2(1) DEVELOPING INSTRUCTIONAL MATERIALS

Form I.2(1)

LESSON ☐ *(SUB-) CRITERION BEHAVIOR* ☐

	MAXIMUM ASSISTANCE	INTERMEDIATE ASSISTANCE	NO ASSISTANCE
RECOGNIZE			
EDIT			
PRODUCE			

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STEP J.1
BEGINS ON THE NEXT PAGE

STEP J.1

J.1* Conduct an informal tryout of the instructional program and revise the program when necessary.

J.1.1 Administer criterion test (and sub-criterion test) as a "before" test to a small sample of the target population.

J.1.2 Administer the program to one student at a time, and, when errors are committed, probe for the source of the problem.

J.1.3 Interpret the nature of the learning failure.

J.1.4 Make revisions in the instructional program based on identified program weaknesses.

*****_The cycle of Sub-STEPS J.1.1, J.1.2, J.1.3, and J.1.4 should be repeated as many times as is feasible within schedule and budgetary constraints. Ultimate absence of student errors indicates that there is no need for further recycling._

STEP J.1

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STEP J.2

J.2 Conduct a developmental tryout of the instructional program and revise the program when necessary.*

J.2.1 Administer the criterion and sub-criterion tests to a representative sample of the target population as a "before" test.

J.2.2 Administer the instructional program to the representative sample and identify the portions of the program on which errors are made.

J.2.3 Administer criterion and sub-criterion tests to the representative sample as an "after" test, identify errors, and, whenever possible, interpret learner difficulties which have resulted in errors.

J.2.4 Administer diagnostic tests and/or conduct interviews to identify learner difficulties which have resulted in the errors which have been made.

J.2.5 Make revisions in the instructional program based on program and test error data and on identified sources of errors.

STEP J.2

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Form J.2(1)

LESSON ☐ *(SUB-) CRITERION BEHAVIOR* ☐ *SUMMARY OF ERRORS ON CRITERION TEST*

ITEM #'S Options Endorsed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
a.																									
b.																									
c.																									
d.																									
e.																									
Total Number of People Making Errors																									
% of Group Making Errors																									
Performance Requirements	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
INPUT recall																									
INPUT transfer																									
ACTION recall																									
ACTION transfer																									

LESSON ☐ (SUB-) CRITERION BEHAVIOR ☐

TEST ERRORS

	ITEMS																											RECALL	TRANSFER	TOTAL	%
STUDENTS ⇩	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	No. of Items	No. of Items	No. of Items	Total Errors / Total No of Items
Percentage of Students																														n =	

Form J.2(3)

STUDENT ANALYSIS

LESSON ☐ *(SUB) CRITERION BEHAVIOR* ☐

RECALL items

CLASS OF ACTION TAKEN

INPUT CLASSES	I	II	III	IV	V	omissions
I	correct					
II		correct				
III			correct			
IV				correct		
V					correct	

SUMMARY OF NO. OF ITEMS

INPUT CLASS	correct	omission	consistent mismatching	inconsistent mismatching
I				
II				
III				
IV				
V				

RECALL PATTERN	correct	omission	consistent mismatching	inconsistent mismatching
no classes				
some classes				
all classes				

TRANSFER items

CLASS OF ACTION TAKEN

INPUT CLASSES	I	II	III	IV	V	omissions
I	correct					
II		correct				
III			correct			
IV				correct		
V					correct	

SUMMARY OF NO. OF ITEMS

INPUT CLASS	correct	omission	consistent mismatching	inconsistent mismatching
I				
II				
III				
IV				
V				

TRANSFER PATTERN	correct	omission	consistent mismatching	inconsistent mismatching
no classes				
some classes				
all classes				

STEP J.3

J.3 Conduct a field test of the instructional program.

J.3.1 Administer pre- and post-tests and the instructional program to a large sample of the target population.

J.3.2 Report results of the field test.

STEP J.3

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